UNITED STATES PATENT AND TRADEMARK OFFICE

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10/552,467	10/07/2005	Tetsujiro Kondo	278694US6PCT	2209

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ART UNIT	PAPER NUMBER
2624	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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	Application No.	Applicant(s)
	10/552,467	KONDO ET AL.
Office Action Summary	Examiner	Art Unit	
	GANDHI THIRUGNANAM	2624	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>27 April 2009</u>.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
     closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-16</u> is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-16</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>07 October 2005</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☒ All b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
         application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

REMARKS

1.   The response received on 27 April 2009 has been placed in the file and was considered by the examiner. An action on the merits follows.

Applicant has amended claims 1, 7, 8 and 14-16. Claim 17-20 has been cancelled. Claims 1-16 are pending.

The Examiner withdraws the 35 USC 101 Rejection of Claim 8.

The Examiner withdraws the 35 USC 112 1st paragraph rejections of claims 15, and 17-20.

The Examiner withdraws the 35 USC 112 2nd paragraph rejections of claims 7 and 14.

Response to Arguments

Applicant argues on page 13 paragraph 3 that Kondo '775 fails to teach or suggest "generating a motion-blurring mitigated object image" and "combining the motion–blurring mitigated object image… into a space-time location in each of the multiple images based on the motion vector detected by the motion vector detection means", as claimed. The recited limitation of "of the multiple images" has been newly amended. The motion-blurring mitigated object image is the foreground image for each synthesized image in Kondo '775.

Applicant further argues on page 14 paragraph 1 Kondo '775 fails to teach "multiple images, each of the multiple images being made up of multiple pixels and acquired by an image sensor having time integration effects". This is clearly shown in

(Kondo, ¶[1251], "In the above, an example has been given of a case of projecting

images in real space having three-dimensional space and time-axis information onto

time-space having two-dimensional space and time-axis information, using a video

camera"). Each of the images inherently has multiple pixels, which were picked up by a

video camera (image sensor having time integration effects i.e. a video).

Claim Rejections - 35 USC § 112

2.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of
> making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the
> art to which it pertains, or with which it is most nearly connected, to make and use the same and shall
> set forth the best mode contemplated by the inventor of carrying out his invention.

3.   Claim 1, 8, 15 and 16 are rejected under 35 U.S.C. 112, first paragraph, as failing

to comply with the written description requirement. The claim(s) contains subject matter

which was not described in the specification in such a way as to reasonably convey to

one skilled in the relevant art that the inventor(s), at the time the application was filed,

had possession of the claimed invention.

         Claim 1 line 12-13 recites "… into a space-time location in each of the multiple

images based on the motion vector". The Examiner was unable to find support for this

limitation. There is support for detecting a motion vector of moving object that moves in

multiple images (See PGPub of Pending Application US2006/0192857, paragraph 59).

The Examiner does see in ('857, paragraph 61) that the "a motion-blurring-mitigated

object image of the moving object is combined into a position of a target pixel in an

image or a position that corresponds to a target pixel in the other image", not each of

the multiple images. Specifically point out where there is support for this added

limitation.

Claims 8, 15 and 16 are rejected under the same reasoning as claim 1 above.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 1-5, 8-12 and 15-16 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Kondo et al. (PGPub #2004/0021775), hereafter referred to as Kondo

in view of Burt (Patent 5,999,662), hereafter referred to as Burt.

Regarding **claim 1,** Kondo discloses an apparatus for processing an image, said

apparatus comprising:

motion vector detection means *(Kondo, Fig. 2 #102, "Movement Detecting Unit")*

for detecting a motion vector about a moving object *(Kondo, Fig. 2 "Movement vector*

and Position information thereof".) that moves in multiple images, each of the multiple

images is made up of multiple pixels and acquired by an image sensor having time

integration effects, and tracking the moving object; *(Kondo, ¶[1251], "In the above, an*

example has been given of a case of projecting images in real space having three-

dimensional space and time-axis information onto time-space having two-dimensional

space and time-axis information, using a video camera")

motion-blurring-mitigated object image generation means for generating a

motion-blurring-mitigated object image in which motion blurring of the moving object is

mitigated using the motion vector detected by the motion vector detection means; and

(Kondo, Fig. 2 #106, "Movement Blurring Adjustment Unit")

output means for combining the motion-blurring-mitigated object image

generated in the motion-blurring-mitigated object image generation means into a space-

time location in each of the multiple images, based on the motion vector being detected

by the motion vector detection means, to output it as a motion- blurring-mitigated image.

(Kondo, Fig. 137, "Image Synthesizing Unit", where the "Background Component

Image" and "Foreground Component Image" are combined, Where the Foreground is

based a movement vector and position information (See Fig. 2))

Kondo does not disclose "combining the motion-blurring-mitigated object image

... into a space-time location in each of the multiple images" but only combines the

current mitigated object image with the current background image for each individual

frame or an arbitrary background image. *(Burt, Fig. 9, where from a sequence of frames*

a foreground (residuals) (moving object) is extracted, which is then combined with a

mosaic of background frames)

It would have been obvious to one of ordinary skill in the art at the time of

invention to modify Kondo with Burt for the purpose of having a stable image without

blur due to movement.

Regarding **claim 2,** Kondo in view of Burt discloses the apparatus for processing

the image according to claim 1,

wherein the motion vector detection means sets a target pixel corresponding to a location of the moving object in any one of at least a first image and a second image, which are sequential in terms of time, and detects a motion vector corresponding to the target pixel by using the first and second images; and *(Kondo, ¶ [0011], "movement vector for indicating relative movement between the pixel data of the frame of interest and the pixel data of the adjacent frame")*

wherein the output means combines the motion-blurring- mitigated object image into a location of the target pixel in said one of the images or a location corresponding to the target pixel in the other image, said locations corresponding to the detected motion vector. *(Kondo, ¶ [0012], "output as first difference image data, and calculate difference based on the mixture ratio of the pixel of interest of the frame of interest between each pixel of the frame of interest of the image data and each pixel of a second adjacent frame adjacent to the frame of interest of the image data, and output as second difference image data")*

Regarding **claim 3,** Kondo in view of Burt discloses the apparatus for processing the image according to claim 1,

wherein in a processing region of the image, the motion- blurring-mitigated object image generation means turns into a model so that a pixel value of each pixel in which no motion blurring corresponding to the moving object occur becomes a value obtained by integrating the pixel value in a time direction with the pixel being moved corresponding to the motion vector *(Kondo, Fig.13, where the pixels not changed in the time direction are set at the background region)* and

generates a motion- blurring-mitigated object image in which motion blurring of
the moving object included in the processing region is mitigated, based on the pixel
value of the pixel in the processing region. *(Kondo, Fig. 2, where the motion blurring is
mitigated by the movement vector which is based on pixel value processing of the
object)*

Regarding **claim 4,** Kondo in view of Burt discloses the apparatus for processing
the image according to claim 3, wherein the motion-blurring-mitigated object image
generation means includes:

region identification means for identifying a foreground region, a background
region, and a mixed region in the processing region, said foreground region being
composed of only a foreground object component constituting a foreground object
which is moving object, said background region being composed of only a background
object component constituting a background object, and said mixed region mixing the
foreground object component and the background object component; *(Kondo, Fig. 6A
and 6B shows the detection of the background, foreground and mixed regions.)*

mixture ratio detection means for detecting a mixture ratio of the foreground
object component and the background object component in the mixed region; *(Kondo,
Fig. 2 #104, and "Mixture Ratio Calculating Unit")*

separation means for separating at least a part of region of the image into the
foreground object and the background object, based on the mixture ratio; and *(Kondo,
Fig. 2 #105, "Foreground/Background Separation Unit")*

motion-blurring-adjusting means for mitigating motion blurring of the foreground

object separated by the separation means based on the motion vector. *(Kondo, Fig. 2*

#106, "Movement Blurring Adjustment Unit")

Regarding **claim 5,** Kondo in view of Burt discloses the apparatus for processing

the image according to claim 3,

wherein the motion vector detection means detects the motion vector every pixel

in the image; and *(Kondo, ¶[0018], "generating movement vector information indicating*

each of the generated movement vectors; wherein, in the weighted difference image

data calculating step, the weighted difference is calculated based on the weighting

indicated by the weighting information between each pixel of the frame of interest of the

image data and each pixel of the adjacent frame adjacent to the frame of interest of the

image data,", where the motion vector is generated for each pixel)

wherein the motion-blurring-mitigated object image generation means sets the

processing region according to the motion vector of the target pixel in the image so that

the processing region includes the target pixel, and outputs pixel value in which motion

blurring of the target pixel is mitigated in pixel units based on the motion vector of the

target pixel. *(Kondo, Fig. 2, where the "Movement Blurring Adjustment Unit" takes in the*

movement vector and outputs the foreground component with the movement blurring

being mitigated.)

Regarding **claim 8,** Kondo discloses a method for processing an image

performed by an image processing apparatus, said method comprising:

motion-vector-detecting step *(Kondo, Fig. 2 #102, "Movement Detecting Unit")* of detecting a motion vector about a moving object that moves in multiple images, each of the multiple images being made up of multiple pixels and acquired by an image sensor having time integration effects, and tracking the moving object; *(Kondo, Fig. 2 "Movement vector and Position information thereof".) (Kondo, ¶[1251], "In the above, an example has been given of a case of projecting images in real space having three-dimensional space and time-axis information onto time-space having two-dimensional space and time-axis information, using a video camera")*

motion-blurring-mitigated-object-image-generating step of generating a motion-blurring-mitigated object image in which motion blurring of the moving object is mitigated using the motion vector detected in the motion-vector-detecting step; and *(Kondo, Fig. 2 #106, "Movement Blurring Adjustment Unit")*

output step, performed by a processor of said image processing apparatus, of combining the motion-blurring-mitigated object image that is generated in the motion-blurring-mitigated-object- image-generating step into a space-time location in each of the multiple images, based on the motion vector detected in the motion-vector-detecting step, to output it as a motion- blurring-mitigated image. *(Fig. 137, "Image Synthesizing Unit", where the "Background Component Image" and "Foreground Component Image" are combined, Where the Foreground is based a movement vector and position information (See Fig. 2))*

Kondo does not disclose "combining the motion-blurring-mitigated object image ... into a space-time location in each of the multiple images" but only combines the current

mitigated object image with the current background image for each individual frame or an arbitrary background image. *(Burt, Fig. 9, where from a sequence of frames a foreground (residuals) (moving object) is extracted, which is then combined with a mosaic of background frames)*

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Kondo with Burt for the purpose of having a stable image without blur due to movement.

Regarding **claim 9,** Kondo in view of Burt discloses the method for processing the image according to claim 8, wherein the motion-vector-detecting step sets a target pixel corresponding to a location of the moving object in any one of at least a first image and a second image, which are sequential in terms of time, and detects a motion vector corresponding to the target pixel by using the first and second images; and *(Kondo, ¶[0011], "movement vector for indicating relative movement between the pixel data of the frame of interest and the pixel data of the adjacent frame")*

wherein the output step combines the motion-blurring-mitigated object image into a location of the target pixel in said one of the images or a location corresponding to the target pixel in the other image, said locations corresponding to the detected motion vector. *(Kondo, ¶ [0012], "output as first difference image data, and calculate difference based on the mixture ratio of the pixel of interest of the frame of interest between each pixel of the frame of interest of the image data and each pixel of a second adjacent frame adjacent to the frame of interest of the image data, and output as second difference image data")*

Regarding **claim 10,** Kondo in view of Burt discloses the method for processing

the image according to claim 8, wherein in a processing region of the image, the

motion-blurring- mitigated-object-image-generating step turns into a model so that a

pixel value of each pixel in which no motion blurring corresponding to the moving object

occur becomes a value obtained by integrating the pixel value in a time direction with

the pixel being moved corresponding to the motion vector and *(Kondo, Fig.13, where*

the pixels not changed in the time direction are set at the background region)

generates a motion-blurring-mitigated object image in which motion blurring of

the moving object included in the processing region is mitigated, based on the pixel

value of the pixel in the processing region. . *(Kondo, Fig. 2, where the motion blurring is*

mitigated by the movement vector which is based on pixel value processing of the

object)

Regarding **claim 11,** Kondo in view of Burt discloses the method for processing

the image according to claim 10, wherein the motion-blurring-mitigated-object-image-

generating step includes:

region identification step of identifying a foreground region, a background region,

and a mixed region in the processing region, said foreground region being composed of

only a foreground object component constituting a foreground object which is moving

object, said background region being composed of only a background object component

constituting a background object, and said mixed region mixing the foreground object

component and the background object component; *(Kondo, Fig. 6A and 6B shows the*

detection of the background, foreground and mixed regions.)

mixture-ratio-detecting step of detecting a mixture ratio of the foreground object component and the background object component in the mixed region; *(Kondo, Fig. 2 #104, "Mixture Ratio Calculating Unit")*

separation step of separating at least a part of region of the image into the foreground object and the background object, based on the mixture ratio; and *(Kondo, Fig. 2 #105, "Foreground/Background Separation Unit")*

motion-blurring-adjusting step of mitigating motion blurring of the foreground object separated in the separation step based on the motion vector. *(Kondo, Fig. 2 #106, "Movement Blurring Adjustment Unit")*

Regarding **claim 12,** Kondo in view of Burt discloses the method for processing the image according to claim 10, wherein the motion-vector-detecting step detects the motion vector every pixel in the image; and *(Kondo, ¶[0018], "generating movement vector information indicating each of the generated movement vectors; wherein, in the weighted difference image data calculating step, the weighted difference is calculated based on the weighting indicated by the weighting information between each pixel of the frame of interest of the image data and each pixel of the adjacent frame adjacent to the frame of interest of the image data,", where the motion vector is generated for each pixel)*

wherein the motion-blurring-mitigated-object-image- generating step sets the processing region according to the motion vector of the target pixel in the image so that the processing region includes the target pixel, and outputs pixel value in which motion

blurring of the target pixel is mitigated in pixel units based on the motion vector of the

target pixel. *(Kondo, Fig. 2, where the "Movement Blurring Adjustment Unit" takes in the*

movement vector and outputs the foreground component with the movement blurring

being mitigated.)

Regarding **claim 15,** Kondo discloses a memory including a program for allowing

a computer to perform a method for processing an image comprising:

detecting a motion vector about a moving object that moves in multiple images,

each of the multiple images being is made up of multiple pixels and acquired by an

image sensor having time integration effects, and tracking the moving object; *(Kondo,*

Fig. 2 #102, "Movement Detecting Unit") (Kondo, Fig. 2 "Movement vector and Position

information thereof".) (Kondo, ¶[1251], "In the above, an example has been given of a

case of projecting images in real space having three-dimensional space and time-axis

information onto time-space having two-dimensional space and time-axis information,

using a video camera")

generating a motion-blurring-mitigated object image in which motion blurring of

the moving object is mitigated by using the motion vector; and *(Kondo, Fig. 2 #106,*

"Movement Blurring Adjustment Unit")

combining the motion-blurring-mitigated object into a space-time location in each

of the multiple images, based on the detected motion vector, to output it as a motion-

blurring-mitigated image. *(Fig. 137, "Image Synthesizing Unit", where the "Background*

Component Image" and "Foreground Component Image" are combined, Where the

Foreground is based a movement vector and position information (See Fig. 2))

Kondo does not disclose "combining the motion-blurring-mitigated object image ... into a space-time location in each of the multiple images" but only combines the current mitigated object image with the current background image for each individual frame or an arbitrary background image. *(Burt, Fig. 9, where from a sequence of frames a foreground (residuals) (moving object) is extracted, which is then combined with a mosaic of background frames)*

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Kondo with Burt for the purpose of having a stable image without blur due to movement.

Regarding **claim 16,** Kondo discloses an apparatus for processing an image, said apparatus comprising *(Claim 16 uses the phrase "configured to". Even though the Examiner is addressing the limitations after the phrase "configured to"):*

a detector *(Kondo, Fig. 2 #102, and "Movement Detecting Unit")* configured to detect a motion vector about a moving object *(Kondo, Fig. 2 "Movement vector and Position information thereof".)* that moves in multiple images, each of the multiple images being made up of multiple pixels and acquired by an image sensor having time integration effects, and configured to track the moving object; *(Kondo, ¶ [1251], "In the above, an example has been given of a case of projecting images in real space having three-dimensional space and time-axis information onto time-space having two-dimensional space and time-axis information, using a video camera")*

a processor configured to generate a motion-blurring-mitigated object image in which motion blurring of the moving object is mitigated by using the motion vector; and *(Kondo, Fig. 2 #106, "Movement Blurring Adjustment Unit")*

an output section configured to combine the motion-blurring-mitigated object image into a space-time location in each of the multiple images based on the motion vector detected at the detector, to output it as a motion-blurring-mitigated image. *(Fig. 137, "Image Synthesizing Unit", where the "Background Component Image" and "Foreground Component Image" are combined, Where the Foreground is based a movement vector and position information (See Fig. 2))*

Kondo does not disclose "combining the motion-blurring-mitigated object image ... into a space-time location in each of the multiple images" but only combines the current mitigated object image with the current background image for each individual frame or an arbitrary background image. *(Burt, Fig. 9, where from a sequence of frames a foreground (residuals) (moving object) is extracted, which is then combined with a mosaic of background frames)*

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Kondo with Burt for the purpose of having a stable image without blur due to movement.

6.   Claims 6 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo in view of Burt in further view of Wang et. Al (Patent #5,557,684), hereafter referred to as Wang.

Regarding **claim 6,** Kondo in view of Burt discloses the apparatus for processing the image according to claim 1,

But does not specifically disclose "further comprising expanded image generation means for generating an expanded image based on the motion-blurring-mitigated image, wherein the output means outputs the expanded image to a location corresponding to the motion vector in a time direction." *(Wang, Fig. 1 shows the mpeg sequence "Flower Garden" where layers are segmented. These regions can have affine transformations completed on them such as "zooming" (Wang, Col. 4 Lines 58-67), where zooming and expanding are defined to be the same thing.)*

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Kondo with Wang for the purpose of identifying motion objects and enlarging them for further clarity.

Regarding **claim 13,** Kondo in view of Burt discloses the method for processing the image according to claim 8,

But does not specifically disclose "further comprising expanded-image-generating step of generating an expanded image based on the motion-blurring-mitigated image, wherein in the output step, the expanded image is output to a location corresponding to the motion vector in a time direction." *(Wang, Fig. 1 shows the mpeg sequence "Flower Garden" where layers are segmented. These regions can have affine transformations completed on them such as "zooming" (Wang, Col. 4 Lines 58-67), where zooming and expanding are defined to be the same thing.)*

It would have been obvious to one of ordinary skill in the art at the time of

invention to modify Kondo with Wang for the purpose of identifying motion objects and

enlarging them for further clarity.

7.   Claims 7 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Kondo in view of Burt in view of Wang in further view of Kondo et al (Patent #

5,940,539), hereafter referred to as Kondo2.

Regarding **claim 7,** Kondo in view of Burt view of Wang discloses the apparatus

for processing the image according to claim 6,

But does not disclose "wherein the expanded image generation means includes:

Movement class determination means *(Kondo2, Col. 4 Lines 28-29) (Fig. 6 #S3,*

"Determine Class") for extracting multiple pixels corresponding to a target pixel in the

expanded image from the motion-blurring-mitigated image and determining a movement

class corresponding to the target pixel based on a pixel value of the extracted multiple

pixels; *(Kondo2, Col. 6 Lines 45-55, "Predictive taps are formed from nine near pixels*

xo to x8…")

storage means for storing predictive coefficients each for predicting a target pixel

from multiple pixels in a first image, said multiple pixels corresponding to a target pixel

in a second image, said predictive coefficients being obtained by learning between the

first and second images every movement class, said first image having number of pixels

corresponding to the motion-blurring-mitigated image, and said second image having

number of pixels more than that of the first image; and *(Kondo2, Col. 4 Lines 30-31)*

predictive value generation means for detecting the predictive coefficients each corresponding to the movement class detected by the movement class detection means from the storage means, extracting the multiple pixels corresponding to the target pixel in the expanded image as a predictive tap from the motion-blurring-mitigated image, and generating a predictive value corresponding to the target pixel according to one-dimensional linear combination of the predictive coefficients detected from the storage means and the predictive tap. *(Kondo2, Col. 4 Lines 32-37)"*

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Kondo and Wang with Kondo2 for the purpose of predicting a pixel position by a class sort adaptive process.

Regarding **claim 14,** Kondo in view of Burt in view of Wang discloses the method for processing the image according to claim 13,

But does not disclose "wherein the expanded-image-generating step includes:

Movement class-determining step of extracting multiple pixels *(Kondo2, Col. 4 Lines 28-29)* (Fig. 6 #S3, "Determine Class") corresponding to a target pixel in the expanded image from the motion-blurring-mitigated image and determining a movement class corresponding to the target pixel based on a pixel value of the extracted multiple pixels; *(Kondo2, Col. 6 Lines 45-55, "Predictive taps are formed from nine near pixels xo to x8...")*

storing step of storing predictive coefficients each for predicting a target pixel from multiple pixels in a first image, said multiple pixels corresponding to a target pixel in a second image, said predictive coefficients being obtained by learning between the

first and second images every movement class, said first image having number of pixels corresponding to the motion-blurring-mitigated image, and said second image having number of pixels more than that of the first image; and *(Kondo2, Lines 30-31)*

predictive-value-generating step of detecting, in the storing step, the predictive coefficients each corresponding to the movement class detected in the movement class-detecting step, extracting the multiple pixels corresponding to the target pixel in the expanded image as a predictive tap from the motion-blurring-mitigated image, and generating a predictive value corresponding to the target pixel according to one-dimensional linear combination of the predictive coefficients detected in the storing step and the predictive tap" *(Kondo2, Lines 32-37)*

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Kondo and Wang with Kondo2 for the purpose of predicting a pixel position by a class sort adaptive process.

Conclusion

8.   Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to GANDHI THIRUGNANAM whose telephone number is

(571)270-3261. The examiner can normally be reached on M-Th, 7:30am to 6pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Bhavesh M. Mehta can be reached on 571-272-7453. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

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/Gandhi Thirugnanam/   /Bhavesh M Mehta/

Examiner, Art Unit 2624

Supervisory Patent Examiner, Art
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